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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/849,571	05/20/2004	Weidong Zhu	UMBC-0015	6579
68733 7590 02/28/2008 THE FLESHNER GROUP, PLLC P.O. BOX 1397 ASHBURN, VA 20146-9998				
EXAMINER				
NGHIEM, MICHAEL P				
ART UNIT		PAPER NUMBER		
2863				
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02/28/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/849,571

Applicant(s)

ZHU ET AL.

Examiner

MICHAEL P. NGHIEM

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Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15, 16, 47-54 and 56-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 48, 50-54, 56-59 and 61 is/are allowed.
- 6) ☒ Claim(s) 15, 16, 47, 49 and 60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

The Amendment filed on December 11, 2007 has been acknowledged.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 15, 16, 47, 49, and 60 are rejected under 35 U.S.C. 102(e) as being anticipated by Weiss et al. (US 2003/0013541).

Regarding claims 15, 47, 49, and 60, Weiss et al. discloses a system (Fig. 19) for determining stiffness parameters of a structure (shaft 110, paragraph 0057), comprising:

- a sensor (1877) arranged to measure vibrations of said structure and output vibration information (paragraph 0116, lines 1-2);
- a stiffness parameter unit (62) for receiving said vibration information (paragraph 0116, lines 1-3), determining natural frequency data or mode shape (vibration frequency, paragraph 0116, lines 4-5; paragraph 0016, lines 6-8) of said

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structure (paragraph 0116, lines 2-5), and determining the stiffness parameters of said structure using said natural frequency or mode shape data (paragraph 0116, lines 4-5; paragraph 0016, lines 6-8).

Regarding claim 15, Weiss et al. further discloses a damage information processor (61) for receiving said stiffness parameters and outputting damage information (data for non-perfect shaft vs. data for perfect shaft displayed via 257, paragraph 0159, lines 18-22, Fig. 25) comprising at least spatial damage information on said structure (symmetry/asymmetry data, paragraph 0160, lines 2-3, represents spatial damage information).

Regarding claim 16, Weiss et al. further discloses a damage extent processor (61) for determining extent of damage information (257 shows deviations between data of non-perfect shaft and data of perfect shaft, Fig. 25).

Regarding claims 47, 49, and 60, Weiss et al. further discloses determining said stiffness parameters using a first order perturbation process (paragraph 0066, lines 8-13).

Allowable Subject Matter

Claims 48, 50-54, 56-59, and 61 are allowed.

Reasons For Allowance

The **combination** as claimed wherein determining said stiffness parameters using a second or higher order perturbation process (claims 48, 50, 61) or said damage information processor outputting damage location information (claim 51) or a random signal generating unit for generating first and second outputs; a random impact actuator for receiving said first and second outputs; and an impact applicator coupled to said random impact actuator and having an impact region; wherein said random impact actuator drives said impact applicator such that the force and arrival times of said impact applicator at said impact region are random (claim 56) is not disclosed, suggested, or made obvious by the prior art of record.

Response to Arguments

Applicant's arguments filed on December 11, 2007 have been fully considered but they are not persuasive.

With respect to the 35 USC 102 rejections, Applicants argue that Weiss does not disclose a damage information processor for outputting damage information comprising at least spatial damage information on the structure. The system of claim 15 is capable of pinpointing the exact spatial location of damage on the structure.

Examiner's position is that Weiss discloses a damage information processor (61) for outputting damage information (data for non-perfect shaft vs. data for perfect shaft displayed via 257, paragraph 0159, lines 18-22, Fig. 25) comprising at least spatial damage information on said structure (symmetry/asymmetry data, paragraph 0160, lines 2-3, represents spatial damage information of member). It is noted that claim 15 does not recite pinpointing the exact spatial location of damage on the structure.

Applicants further argue that Weiss does not disclose an iterative processing unit that determines said stiffness parameters using a first order perturbation process. The invention utilizes an iterative processing unit that determines the actual stiffness parameters at selectable spatial locations using a first order perturbation process.

Examiner's position is that Weiss discloses "the location of the principal planar oscillation plane is located to a first-order approximation -- i.e., at least to within the correct quadrant -- by determining the orientation of the direction of greatest resistance to bending of the golf club shaft". As acknowledged by the Applicants, Weiss teaches determining a first-order approximation of the plane or angle of oscillation (see Applicants' remarks, page 12, 1st paragraph, lines 10-12). Weiss further teaches determining the orientation of the direction of greatest resistance to bending of the golf shaft (paragraph 0066, lines 9-11). This teaching is consistent with the definition of perturbation -- a disturbance of motion, course, arrangement, or state of equilibrium (see Merriam-Webster Dictionary OnLine). Thus, Weiss teaches an iterative processing unit

that determines said stiffness parameters using a first order perturbation process (paragraph 0066, lines 5-11). It is noted that “an iterative processing unit that determines the actual stiffness parameters at selectable spatial locations using a first order perturbation process” is not recited in the claims.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Contact Information

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Nghiem whose telephone number is (571) 272-2277. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Michael P. Nghiem/

Primary Examiner, GAU 2863

February 20, 2008